CLAIMS

1. In a natural language understanding (NLU) system, a method for including grammars in a statistical parser comprising:

receiving a text input; and,

applying a first context free grammar (CFG) to said text input to determine substrings and corresponding parse trees, wherein said substrings and said corresponding parse trees further correspond to said first CFG; and,

examining each said possible substring using an inventory of queries corresponding to said CFG.

2. The method of claim 1, further comprising:

comparing a probability value corresponding to each said substring to one or more threshold probability values, wherein said first CFG is a probabilistic CFG (PCFG).

3. The method of claim 1, wherein said inventory of queries further includes:

queries corresponding to a non-terminal within said first CFG.

4. The method of claim 1, wherein said inventory of queries further includes:

queries corresponding to a terminal within said first CFG.

5. The method of claim 2, wherein said inventory of queries further includes:

queries corresponding to a non-terminal within said first PCFG.

6. The method of claim 2, wherein said inventory of queries further includes:

queries corresponding to a terminal within said first PCFG.

7. The method of claim 1, further comprising iteratively applying different CFGs using a different CFG during each iteration to determine additional substrings and corresponding parse trees relating to each said different CFG applied to said text input.

8. The method of claim 2, further comprising iteratively applying different PCFGs using a different PCFG during each iteration to determine additional substrings and corresponding parse trees relating to each said different PCFG applied to said text input.

9. The method of claim 1, wherein said inventory of queries has a hierarchy determined during training of the NLU system.

10. The method of claim 7, further comprising the step of:

examining each said additional substring determined by each said different CFG using said inventory of queries wherein said inventory of queries contains queries corresponding to each said different CFG.

11. The method of claim 8, further comprising the step of:

examining each said additional substring determined by each said different PCFG using said inventory of queries wherein said inventory of queries contains queries corresponding to each said different PCFG.

12. The method of claim 10, wherein said inventory of queries further includes:

queries corresponding to a non-terminal within each said different CFG.

13. The method of claim 10, wherein said inventory of queries further includes:

queries corresponding to a terminal within each said different CFG.

14. The method of claim 11, wherein said inventory of queries further includes:

queries corresponding to a non-terminal within each said different PCFG.

15. The method of claim 11, wherein said inventory of queries further includes:

queries corresponding to a terminal within each said different PCFG.

16. A system for recognizing grammatical phrases in a text input comprising:

a text buffer for storing said text input;

at least one context-free grammar (CFG) for recognizing a particular grammatical phrase within said text input; and,

an inventory of queries wherein each query within said inventory of queries corresponds to said at least one CFG;

wherein said at least one CFG is applied to said text input in said text buffer to determine substrings and corresponding parse trees;

said inventory of queries is further applied to said substrings to determine said particular grammatical phrase.

17. The system of claim 16, wherein said at least one CFG is a probabilistic CFG (PCFG) containing a probability value corresponding to each rule also within said at least one PCFG.

18. A system for recognizing grammatical phrases in a text input comprising:

a text buffer for storing said text input;

at least one context-free grammar (CFG) for recognizing a particular grammatical phrase within said text input; and,

one or more features wherein each said feature corresponds to said at least one CFG;

wherein said at least one CFG is applied to said text input in said text buffer to determine substrings and corresponding parse trees;

said features are further applied to said substrings to determine said particular grammatical phrase.

19. The system of claim 18, wherein said at least one CFG is a probabilistic CFG (PCFG) containing a probability value corresponding to each rule also within said at least one PCFG.

20. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

receiving a text input;

applying a first context free grammar (CFG) to said text input to determine substrings and corresponding parse trees, wherein said substrings and said corresponding parse trees further correspond to said first CFG; and,

examining each said possible substring using an inventory of queries corresponding to said CFG.

21. The machine readable storage of claim 20, further comprising iteratively applying different CFGs using a different CFG during each iteration to determine each possible substring and corresponding parse tree relating to each said different CFG applied to said text input.

22. The machine readable storage of claim 20, wherein said first CFG is a probabilistic CFG (PCFG) having one or more threshold probability values.

23. The machine readable storage of claim 20, said inventory of queries having a hierarchy determined during training of an NLU system.

24. In a natural language understanding (NLU) system, a method for including grammars in a statistical parser comprising:

receiving a text input; and,

applying a first context free grammar (CFG) to said text input to determine substrings and corresponding parse trees, wherein said substrings and said corresponding parse trees further correspond to said first CFG; and,

examining each said possible substring using one or more features corresponding to said CFG.

25. The method of claim 24, further comprising comparing a probability value corresponding to each said substring to one or more threshold probability values, wherein said first CFG is a probabilistic CFG (PCFG).

26. The method of claim 24, wherein said inventory of queries further includes:

features corresponding to a non-terminal within said first CFG.

27. The method of claim 24, wherein said inventory of queries further includes:

features corresponding to a terminal within said first CFG.

28. The method of claim 25, wherein said features further include:

features corresponding to a non-terminal within said first PCFG.

29. The method of claim 25, wherein said features further include:

features corresponding to a terminal within said first PCFG.

30. The method of claim 24, further comprising iteratively applying different CFGs using a different CFG during each iteration to determine additional substrings and corresponding parse trees relating to each said different CFG applied to said text input.

31. The method of claim 25, further comprising iteratively applying different PCFGs using a different PCFG during each iteration to determine additional substrings and corresponding parse trees relating to each said different PCFG applied to said text input.

32. The method of claim 24, each said feature having a weight determined during training of said NLU system.

33. The method of claim 30, further comprising the step of:

examining each said additional substring determined by each said different CFG using said features, wherein said features further correspond to each said different CFG.

34. The method of claim 31, further comprising the step of:

examining each said additional substring determined by each said different PCFG using said features, wherein said features further correspond to each said different PCFG.

35. The method of claim 33, wherein said features further include:

features corresponding to a non-terminal within each said different CFG.

36. The method of claim 33, wherein said features further include:

features corresponding to a terminal within each said different CFG.

37. The method of claim 34, wherein said features further include:

features corresponding to a non-terminal within each said different PCFG.

38. The method of claim 34, wherein said features further include:

features corresponding to a terminal within each said different PCFG.

39. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

receiving a text input;

applying a first context free grammar (CFG) to said text input to determine substrings and corresponding parse trees, wherein said substrings and said corresponding parse trees further correspond to said first CFG; and,

examining each said possible substring using one or more features corresponding to said CFG.

40. The machine readable storage of claim 39, further comprising iteratively applying different CFGs using a different CFG during each iteration to determine additional substrings and corresponding parse trees relating to each said different CFG applied to said text input.

41. The machine readable storage of claim 39, wherein said first CFG is a probabilistic CFG (PCFG) having one or more threshold probability values.

42. The machine readable storage of claim 39, each said feature having a weight determined during training of an NLU system.

43. In a natural language understanding (NLU) system, a direct channel method for determining a meaning for a text input comprising:

selectably applying a reusable context free grammar (CFG) to a text input;

identifying one or more substrings within said text input, each said substring corresponding to said reusable CFG; and,

determining a meaning for said text input based upon said identified substrings from possible meanings within said reusable CFG.

42. The method of claim 41, further comprising:

comparing a probability value corresponding to each said substring to one or more threshold probability values, wherein said first reusable CFG is a reusable probabilistic CFG (PCFG).

43. The method of claim 41, further comprising iteratively applying different selected CFGs to said text input.

44. The method of claim 42, further comprising iteratively applying different selected PCFGs to said text input.

45. The method of claim 41, said determining step comprising

applying features having weights corresponding to said substrings to said text input.

46. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

selectably applying a reusable context free grammar (CFG) to a text input;

identifying one or more substrings within said text input, said substrings corresponding to said reusable CFG; and,

determining a meaning for said text input based upon said identified substrings from possible meanings within said reusable CFG.

47. The machine readable storage of claim 46, further comprising:

comparing a probability value corresponding to each said substring to one or more threshold probability values, wherein said first reusable CFG is a reusable probabilistic CFG (PCFG).

48. The machine readable storage of claim 46, further comprising iteratively applying different selected CFGs to said text input.

49. The machine readable storage of claim 47, further comprising iteratively applying different selected PCFGs to said text input.